

Incipient stages of disease introductory to a state of fever or inflammation.

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REMARKS ON THE NATURE AND TREATMENT OF PURIFORM OPHTHALMIA.

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FEW diseases, to which the organ of sight is liable, have a more direct tendency to effect its destruction, than that species of ophthalmia, which, from a remarkable symptom attendant on it, has been denominated puriform. Much praise is due to the late Mr. Saunders, for a very accurate history of the disease; indeed, before his essay on the subject appeared, practitioners were not well acquainted with the nature of certain organic changes which take place when the complaint assumes a violent form. These changes are the effects of excessive action in the vessels of the conjunctiva, eventually extending to that part of the membrane which covers the front of the transparent cornea. In common ophthalmia, the disease is often confined to the conjunctiva of the palpebræ and sclerotica; and, even where it extends to the cornea, the inflammation, for the most part, terminates in the adhesive stage, and more or less opacity is the consequence. But, in cases of that form now under consideration, there is but little disposition to the effusion of coagulable lymph. It, however, sometimes takes place; and, provided the inflammation has begun to decline, may be looked upon as a favourable symptom. In extreme cases, the conjunctiva sloughs; and as that part of it which passes over, and is most firmly attached to the cornea, has but little power to withstand disease,

a slough, or sloughing ulcer, first forms on the conjunctiva of the cornea. Eventually, the proper lamellæ of the cornea partake of the same morbid actions; but I believe it is only from contiguity that the actual substance of this tunic becomes affected, the conjunctiva being the primary seat of disease. In proof of this, we may observe, that the slough first formed is superficial, and soon cast off. Afterwards, if the disease is not checked, the sloughs are deeper, and more time is required for their separation. In no instance have I observed the anterior chamber to be opened at once; but where this unpleasant circumstance has happened, it has been by a *succession* of sloughs, or the spreading of ill-conditioned ulceration. The puriform ophthalmia of the infant, and that of the adult, often termed the Egyptian ophthalmia, produce the same effects on the conjunctiva and cornea. When the inflammatory symptoms run very high, sloughing is the consequence; when less violent in degree, an effusion of coagulable lymph may take place. The opacity produced by this effusion is to be carefully distinguished from a peculiar dusky appearance observable on the cornea, when a portion of it is about to slough; an appearance much to be dreaded. It is, indeed, as a late writer has well expressed, the "unerring harbinger of mortification." When the disease has been neglected, or we have not been able to put a stop to the sloughing process, the anterior chamber of the aqueous humour becomes opened. The iris then protrudes, and, in its turn, ulcerates; finally, the lens and vitreous humour issue through the breach in the cornea. This concludes the sad eventful history of a case of severe puriform ophthalmia. It fortunately happens, that such a termination is rare, compared with the frequency of the complaint. Even should the anterior chamber become opened, and the iris protrude, provided the aperture in the cornea is but small, and we pursue the proper treatment, the iris will adhere to the edges of the ulcer; lymph will be effused, and the healing process soon be completed. Though the iris will be forever adherent to the cornea at that part, yet vision will not be materially impaired. It must be understood, however, that we can only hope for this favourable termination, when the circumstances I have mentioned occur in a slight degree; for, not to speak of the extensive opacity of the cornea, left on the healing of a large ulcer, the pupil will become so

deranged, from being dragged under the opaque portion of the membrane to which it is adherent, as to prevent the passage of rays through it; nay, sometimes the pupillary edge of the iris will become fixed throughout its circumference, to a central penetrating ulcer of the cornea. Here it is obvious, that nothing will be likely to benefit the patient, but his submitting to an operation for cutting the iris, and removing the crystalline body, which in these cases I have always found opaque. But this is a subject foreign to my present purpose. It is not my intention at this time to enter into a minute detail of the various measures to be adopted in the treatment of puriform ophthalmia. Indeed I wish to confine my observations to a consideration of the remedies to be used, where sloughs, or sloughing ulcers, have formed on the cornea. From the rapidity with which the disease runs through its course, those afflicted will frequently not apply for relief until the violence of the inflammation has begun to decline. It is about this period that the structure of the cornea suffers.

In every case of puriform ophthalmia, it is the duty of a surgeon to make himself acquainted with the actual state of the organ; and this object is frequently not very easy to accomplish, owing to the great tumefaction of the eye-lids. On an attempt being made to separate the palpebræ in the common way, the orbicularis muscle contracts, and projects the tumid conjunctiva, obscuring the whole ball of the eye. From having been witness to perhaps some of the worst cases that can possibly happen, I believe I am warranted in saying, that in no instance need we fail in our attempts to obtain a view of the cornea.

It is rather difficult at first to get the method of separating the eye-lids, so as to prevent the distended conjunctiva from protruding. When difficulty occurs, I always use Pellier's speculum, which is, I think, preferable to any other instrument. On this subject I can speak with a good deal of confidence, having, whilst a pupil of the London Eye Infirmary had daily opportunities of inspecting purulent eyes. I generally succeed best in the following manner: I first wipe the eye-lids from any discharge or moisture which may happen to be on them; and, placing the fore-finger of my right hand exactly on the edge of the tarsus of the upper lid, and my left thumb on the tarsus of the lower, I do not begin immediately to separate the palpebræ,

but endeavour to get the swollen conjunctiva quite under the lids. Having done this, I press the tarsi upwards and downwards, fixing them completely on the bony margins of the orbit. By this means, the conjunctiva of the palpebræ is kept completely under the cartilaginous edges of the lids.

This is the way in which I make an examination with the fingers; but no general rule can well be given, as I imagine different surgeons may have different methods, equally good. Where chemosis is present, in any remarkable degree, the speculum is, perhaps, preferable to the fingers, as the discharge is apt to get under the latter, and cause them to slip. Notwithstanding all Mr. Saunders has said relative to an inspection of the cornea, I am convinced that it is too much the custom to decline examination when any difficulty occurs. The complaints of a young patient, and the ill-timed interference of his friends, will also do much to deter a young practitioner. But when we consider how important it is, both with regard to our prognosis and treatment, no one will surely deny, that a knowledge of the precise state of the cornea is indispensably necessary. We may, indeed, sometimes *guess* that sloughs are forming on the cornea; for, in some particular habits, the general powers of the constitution become much depressed, the pulse is languid, and there is a tendency to profuse perspiration. We are not to wait for these symptoms before we examine, or to flatter ourselves, where they are absent, that all is going on well. I have selected the following case, from a vast number, as I think it shews several interesting facts in a very striking light:

CASE.

April 2d, 1814.—I was desired to visit George Jones, a weakly, delicate boy, five years of age, and of a scrophulous habit. The disease had existed several days when I first saw him. I examined his eyes. The palpebræ were enormously swollen; puriform discharge very profuse. On the external margin of the cornea of the right eye, was a dusky elevated opaque spot, denoting that a slough had formed. The whole cornea was cloudy, but this latter appearance was totally different from that exhibited at the particular part I have mentioned. The conjunctiva of the left eye was most acutely inflamed; diffused opacity of the cornea, but no appearance of slough or ulcer. I injected a

weak solution of alum on both eyes, and directed that it should be repeated every four hours; and, in the intervals, to keep the eye-lids moist with common saturnine wash. Four leeches were applied to the left eye.

R. Ext. cinchonæ, gr. x. in pil. ij. dividend. 4tis horis sumend.

3d.—The sloughy spot of the right cornea was elevated, and had a groove around it; palpebræ less swollen. The bark was continued.

4th.—His pulse, which had hitherto been small and languid, had now acquired a good deal of firmness and regularity; puriform discharge lessened; palpebræ much less swollen. On injecting the right eye, I washed away the slough, which came off in one piece. The ulcer left by this separation has ragged edges, with a transparent bottom; the left cornea so opaque, the iris cannot be seen through it. The alum injection was omitted, as well as the bark. A purgative powder was given, and two leeches applied to the left eye-lid.

5th.—The ulcer of the right cornea is extending; the discharge is of a light yellow colour, and more viscid; left cornea a good deal clearer. I injected a solution of alum on the ulcer of the right cornea, and again gave the bark in the same dose as before.

7th.—Lymph is deposited in the bottom and on the margin of the ulcer; the inflammation in the left eye has increased; the cornea is again so opaque that the iris cannot be seen through it; discharge very profuse. A dose of calomel and jalap was ordered; four leeches applied to the left palpebræ; bark omitted.

8th.—Ulcer of the right cornea healing; left cornea rather clearer; tumefaction of the eye-lids and discharge abating.

10th.—Ulcer of cornea nearly healed; left cornea nearly clear, except a small central speck; bowels confined. Repeat the purge, and use a common saturnine wash.

12th.—Tumefaction so much subsided that he opens both eyes; his vision is tolerably good in the left eye; he marked out to me the figures on the face of a watch; there is a large opaque spot on the outer margin of the right cornea, left on the healing of the ulcer; discharge has not quite ceased. A weak solution of sulphate of zinc was ordered as a lotion. Acid. sulph. dil. gr. vi. ter de die.

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18*th*.—The active inflammation has ceased in both eyes, but there is a profuse discharge of tears; they are morbidly sensible to the light.

22*d*.—I directed that a small quantity of a mixture, consisting of equal parts of vin. opii and water, should be dropped on the left cornea daily.

24*th*.—His general health is much improved; opacity of the left cornea diminished. Continue the acid twice a day.

My patient went on well till the 28*th*, when I was again desired to see him. I found that he had, the day before, been attacked by inflammation in both eyes; the right conjunctiva was very vascular, and discharged a puriform fluid; the left eye was but slightly inflamed; the palpebræ were beginning to swell. Three leeches were applied to each eye; a purgative was given; and I injected a solution of alum.

29*th*.—Right eye-lids enormously swollen; puriform discharge increased; right cornea quite opaque; no slough or ulcer; left eye but slightly inflamed; complains of great pain in his head; pulse quick, with hot and dry skin. Two leeches to the right eye; a table-spoonful of common saline mixture, with four drops tinct. digitalis every three hours. I injected the solution of alum.

30*th*.—The centre of the right cornea has become elevated; pain in the head very violent; stools offensive and dark-coloured; breath foul. A powder of calomel and rhubarb was ordered.

May 1*st*.—Central opaque spot of the cornea is evidently a slough; at its upper part it is beginning to separate; there is also a dusky coloured spot on the cicatrix of the old ulcer; still complains of pain in his head; inflammation of the left eye ceased. I omitted the alum injection.

2*d*.—Nearly one half of the cornea has sloughed and separated; the bottom of the ulcer is also in a sloughy state; no headache; pulse feeble. Ext. cinchon, gr. x. 4*tis* horis. I injected a solution of alum on the ulcer.

3*d*.—Ulceration extending superficially along the cornea; the bottom of the ulcer is of a dirty yellow colour; he is much emaciated, and so weak he can scarcely stand.

5*th*.—The deep-seated slough at the bottom of the ulcer is separating.

7th.—The slough has separated, and the anterior chamber is opened ; the iris is in contact with the edges of the ulcer of the cornea. Has continued his bark since the 2d ; appetite improved, and he gains strength.

8th.—The iris protrudes ; ulcer of the cornea very irritable. I injected a weak solution of nitrate of silver, and added acid. sulph. dil. gr. v. to be taken in a little water, with each dose of bark.

9th.—The portion of protruded iris has ulcerated ; something came through the aperture in the cornea, which I took to be the lens in an opake state ; the size of the eye-ball is much diminished ; tumefaction of the palpebræ and discharge have quite ceased.

11th.—The parts are now taking on healthy actions ; lymph is effused from the remaining part of the cornea.

12th.—Red vessels are shooting into the lymph.

15th.—The ulcer is closing fast. Since the 3d his bowels have been occasionally emptied by some mild aperient ; the bark was omitted.

17th.—Ulcer nearly healed, the cornea is only transparent at its inner margin ; has lost all useful vision in that eye ; left eye continues well.

22d.—Ulcer is quite healed, and the strength of my patient being somewhat recruited, he left Manchester to enjoy the benefit of sea air.

Vehement local action often occurs, where the actual powers of the part and general constitution are but weak. In no instance is this more plainly shewn, than in some cases of sloughing of the cornea. The death of a portion of the cornea, in a young and tolerably healthy subject, takes place from violent inflammation, as may happen in any other part of the body. Here, generally, when the slough is cast out, the restorative process will go on uninterruptedly ; but, in the scrofulous, or otherwise debilitated habit, it is widely different. The cornea is a part but feebly endowed with living power ; a great effort of the constitution is therefore required to enable it to repair its diseases ; so we find, that should the slough of the cornea, occurring in certain habits, become separated, the contiguous parts, participating in the morbid actions, also die. The healing of an ulcer of the cornea differs not from that of any other ulcer. Lymph must be effused ;

that lymph must be organized ; the process of granulation must be completed. Do we not every day see this circumstance happen ? An ulcer (let us say on the leg) is healing, granulations have shot forth, but the constitution, from some cause or other, becomes disturbed ; suddenly the new formed parts are absorbed, and a deep foul ulcer is left. So again it is with the ulcer of the cornea. Where the constitution has begun to flag, I have seen an ulcer of the cornea, just on the point of healing, have its granulations all absorbed, or large portions of the membrane die, till the whole has been destroyed. In the case I have related, it will be observed that I gave bark in pretty large doses. I have, however, I hope, clearly defined the circumstances under which it was administered. The pulse was feeble ; the sloughy spot on the cornea exhibited a well known appearance. I was convinced that, when this slough separated, there would be little power to heal the ulcer. A spreading of this ulcer must therefore in all probability happen. At my third visit, finding my patient's general state so much improved, I omitted the bark, being unwilling to excite, even indirectly, too vigorous an action in parts already enfeebled by disease. I certainly expected that I should soon see the ulcer put on marks of healing. In this I was disappointed ; for on the 5th the ulcer had an unpleasant appearance, and was extending rapidly. The bark was again given till the 7th, when, lymph being deposited round the margin, and at the bottom of the ulcer, it was a second time omitted. At the period when the tonic plan is to be adopted, the bowels ought to be regulated with the mildest laxatives, but purging is to be avoided. In the scrofulous subject, after the tumefaction and purulent discharge have ceased, and the ulcers healed, if there have been any, the complaint frequently assumes a chronic form ; there is a profuse secretion of tears, and the eyes are morbidly sensible to the light ; in short, a species of scrofulous ophthalmia succeeds the puriform. In these cases, I have seen the most decided benefit arise from the exhibition of small doses of calomel and opium combined. The constitution should also be invigorated by tonics, sea-air, &c. We must here be careful not to apply local stimulants too soon, even though there is no appearance of general increased vascular action in the organ. Here I have seen much mischief arise, from the indiscriminate use of the *vinum opii* ; though there are cases requiring it. I am much inclined

to attribute the second attack of inflammation in Jones's case, to the inadvertent application of a handkerchief to his eyes, which had been stained with the former purulent discharge; but I could never exactly ascertain the fact. The different stages of the disease were admirably shewn: 1st, On the left eye, the termination in the adhesive stage leaving opacity. 2dly, The striking difference in the appearances exhibited by this opacity, and the opaque spot on the right cornea, previous to the formation of a slough. 3dly, The efficacy of bark in putting a stop to the sloughing; and though in the second attack it failed to do so, until the organ was almost destroyed, yet in the end it did accomplish the object for which it was administered. Had my principal view in relating the case, been to confirm the fact that cinchona is the remedy on which we must often place our chief reliance in sloughing of the cornea, I could have brought a host of instances. Lastly, The process set up by nature to repair the disease, even when the whole substance of the cornea has been destroyed. Here there is an attempt to form a new cornea, but it is permanently opaque.

From the Edinburgh Medical and Surgical Journal.

MANCHESTER, June 4th, 1814.

*Memoir upon the Compound and Smooth or Simple Eyes of
Insects, and on the Manner in which these two
Species of Eyes concur in Vision.*

BY M. MARCEL DE SERRES, Professor of the Sciences in the
Imperial University.*

Visus igitur quo insecta gaudent nulla penitus ratione cum nostris oculis
aut cum camera obscura in qua rerum species, reflexionis ope, super
charta aut panno albicante pinguuntur in comparationem venire potest.
SWAMMERDAM, *Biblia Naturæ*, tom. i, p. 502.

SIGHT seems to be one of the most perfect of the senses of insects; and in this respect these animals are in the first line among those without vertebræ, as birds are among those with vertebræ. Both enjoy a very long sight; and we know at how great a distance the maggot, like the bird of prey, perceives the object which it wishes to devour. Is the great quantity of air in-

* *Phil. Mag. from Magasin Encyclopedique*, February, 1814.